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AUTHOR Rivera, Hipolito
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ABSTRACT

The release of the newest Sixteen Personality Factor Questionnaire (16PF), Fifth Edition, is the evolution of Raymond Cattell's conceptualization of the primary components of personality by analyzing adjectives describing human behavior. This updated version continues to measure the same 16 primary personality factors with improved reliability and validity. The 16PF Fifth Edition also includes five global factors. The face validity of the instrument is excellent. Norms were created with a final normative sample of 22,5000, and test-retest coefficients have offered evidence of stability over time of the traits measured by the 16PF. The wide use of the 16PF includes applications in industry and business for selection of personnel. The instrument is ideal for the school professional dealing with adolescents with adjustment problems and for advising students going to college. The 16PF is also being explored as a screening management tool for professional military personnel. (Author/SLD)

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Critique of 16 PF

Hipolito Rivera

Eastern New Mexico University

TM 025853

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Abstract

The release of the newest Sixteen Personality Factor Questionnaire, Fifth Edition, is the evolution of Dr. Raymond Cattell's primary components of personality by factor analyzing all adjectives describing human behavior. This updated version continues to measure the same 16 primary personality factors with improved reliability and validity. The 16 PF's wide use includes industry and business for selection of personnel and is ideal for the school professional dealing with adolescents with adjustment problems, and when advising students going to college. It is also being explored as a screening management tool for professional military soldiers.

Critique of 16 PF

Introduction

In 1949, Raymond Cattell published the first edition of the Sixteen Personality Factor Questionnaire. It was a revolutionary concept that measured the whole of human personality using a structure discovered through factor analysis. In the new Fifth Edition, factor measurement has been fine-tuned and it has improved psychometric characteristics for higher reliability than ever before. Although there are currently no literature reviews on this recently released edition (The Institute for Personality and Ability Testing was called to see if there were any), it has been currently used as a research tool to identify personality traits in mathematical achievement (Shaughnessy, Spray, & Moore, 1995).

Setting

As a counselor for the Education Office at Cannon Air Force Base, New Mexico, there is a need for quality screening of military members to ensure peak performance from both noncommissioned (enlisted) and commissioned officers. Finding if there are any distinguishing personality factors between the two, would be of enormous worth. In short, are there any characteristics that can highlight college graduates who will be more successful in the Air Force as noncommissioned officers and those who will better serve their country as commissioned officers?

General Information

The test is known as the Sixteen Personality Factor (16PF), Fifth Edition and is designed to be administered to adults, 16 and older, either individually or in a group setting. It takes approximately 35-50 minutes to complete by hand and about 5 minutes to complete by computer.

The Institute for Personality and Ability Testing will process, score and return one's report for an extra three dollars per report. They also accept scoring requests by Onfax, a fax system that costs an additional three dollars, but gets the report back to you within a couple of hours. OnFax has a one time registration fee of $50.00. The 16PF Fifth Edition costs $92.00 for a complete set. The introductory kit includes: 16PF Fifth Edition Administrator's Manual, questionnaires, answer sheets, individual record forms, and scoring keys. The 16PF was published by the Institute for Personality and Ability Testing, Incorporated in 1994 and was developed by Raymond Bernard Cattell, a psychologist, who has a degree in chemistry and a Ph.D. and a D. Sc. in Psychology.

Purpose and Nature of Test

In 1949, Raymond Cattell published the first edition of the 16PF. It was a revolutionary concept that measured the whole of human personality using a structure discovered through factor analysis. The 16PF Fifth Edition contains 185 items that comprise the 16 primary personality factor scales as well as an Impression Management Index (IMI), which assess social desirability. Each scale contains 10 to 15 items.

The latest edition represents a controlled, natural evolution of the 16PF that continues to assess the 16 personality factors and measures levels of warmth, reasoning, emotional stability, dominance, liveliness, rule-consciousness, social boldness, sensitivity, vigilance, abstractedness, privateness, self-reliance, perfectionism and tension. The 16PF Fifth Edition also includes five global factors: extroversion, anxiety, tough-mindedness, independence, and self control. The basic score report can be done by use of a template while the basic interpretive report is computerized.

The first page reports basic scores and presents a profile of the 16 primary personality traits and an additional profile of the five global personality factors. The rest of the report is divided into three sections.

First, basic personality information is organized in terms of the five global factors. That is, each global factor is profiled along with its related primary factors. Interpretive statements about the particular global factor, and any primary factors outside the average range of scores, follow each profile.

The second section presents criterion scores while the third section presents information on how the client's personality relates to six vocational orientations, based on Holland's vocational themes. The basic score report, however, does not include a narrative.

The 16PF is used extensively in industry and business for selection and development of personnel. It identifies personal qualities that influence work-setting behaviors, such as problem-solving style and interpersonal style. It is also used for school professionals when dealing with adolescents with adjustment problems, and when advising college and college-bound students. The information available in 16PF reports, such as occupational profile data, is very helpful for guidance counseling as well as in vocational and rehabilitational counseling. In clinical settings, it provides psychologists with measures of anxiety, adjustment and other behavioral trends that help counselors make diagnostic decisions and plan treatment strategies. In short, the personality profile enables one to structure an appropriate, individualized therapy program for each client or when counseling couples. The overall readability of this test is at the fifth-grade level.

Practical Evaluation

The 16PF Fifth Edition has excellent face validity. The test is relatively easy to take with all

of the 185 questions having to be answered by either A, B, or C. The basic score report can be done by use of a template, but the interpretive report is computerized; its narrative includes single and multiple factor interpretations organized around the five global personality factors and the narrative presented is in statement form, rather than as an integrated discussion.

Technical Information

Norms. The 16PF Fifth Edition was administered to a large group (N = 4,449), and then a stratified random sampling was used to create the final normative sample of 22,500. Sample stratification was done on the basis of gender, race, age, and educational variables, with the target number for each variable derived from 1990 U.S. Census figures (Conn & Rieke, in press-a).

The following summarizes the norm sample demographics: Size of the norm sample is 2,500: 1245 males and 1,255 females (49.8% male, 50.2% female). Ages ranged from 15 to 92 with a mean age of 33.3 years. The sample was 8.4% Caucasian, 12.8% African American, 3.0% Asian American, 2.3% Native American, and 9.0% Hispanic. Approximately 16% of those in the sample reside in Northeastern states, 15% in Southeastern states, 28% in North Central states, 14% in South Central states, and 24% in Western states.

The 16 PF's raw score are converted to a standard (sten) score by use of a norm table that is included with the set of hand scoring keys. Stens are based on a 10-point scale with a mean of 5.5 and a standard deviation of 2. Each question of the test loads on to one of the 16 factors. Consequently, it's easy to figure out the percentages of answers to each factor by using the table on Appendix B which shows how to convert raw scores to percentile rank.

Reliability. Test-retest coefficients offer evidence of the stability over time of the different traits measured by the 16PF. Pearson Product-Moment Correlations were calculated for

two-week and two-month test-retest intervals. Examinees for the two-week interval were 204 (77 male, 127 female) university undergraduate and graduate students. Their mean age was 20.5 years, and their mean education level was 13.8 years. Reliability coefficients for the primary factors ranged from .69 (Reasoning, Factor B) to .86 (Self-Reliance, Factor Q2), with a mean of .80. Test-retest coefficients for the global factors were higher, ranging from .84 to .9 with a mean of .87.

For the two-month interval, the sample consisted of 159 university undergraduates (34 male, 125 female). The mean age of the group was 18.8 years, and the mean education level was 12.6 years. For the primary factors, reliability coefficients ranged from .56 (Vigilance, Factor L) to .79 (Social Boldness, Factor H), with a mean of .70. Test-retest coefficients for the global factors ranged from .70 to .82, with a mean of .78.

Internal Consistency. As a measure of scale internal consistency, Cronbach's alpha coefficient for the 16PF were calculated on the general population norm sample of 2,500 adults. Values ranged from .64 (Openness to Change, Factor Q1) to .85 (Social Boldness, Factor H), with an average of .74.

Validity. Construct validity of the 16PF Fifth Edition demonstrates that the test measures 16 distinct personality traits. Criterion validity of the 16PF Fifth Edition is demonstrated by its ability to predict various criterion scores. Correlation studies between the 16PF Fifth Edition and the Coopersmith Self-Esteem Inventory, Bell's Adjustment Inventory, and the Social Skills Inventory were shown. The aforementioned measures self-esteem, adjustment, and social skills, respectively.

Another example is the administration of the 16PF Fifth Edition and the Myers-Briggs Type

Indicator (MBTI). The MBTI is a 126-item questionnaire based on Carl Jung's theory of Psychological Types (Jung, 1971). This theory posits that individual differences result from the degree to which persons prefer particular styles of perception and judgment. The MBTI identifies four bipolar psychological indices: Extroversion- Introversion, Sensing-Intuitive, Thinking-Feeling, and Judging-Perceptive. Combinations of the four preferences form 16 personality "types."

The 16PF Fifth Edition and the MBTI were administered to a sample of 119 university students (42 males, 77 females; mean age 25.3 years; mean education level 14.4 years). As expected, the 16PF Fifth Edition's Extroversion global factor correlates positively with the MBTI Extroversion type (r = .68), and negatively, with the Introversion type (r = -.61). All primary factor scales comprising 16PF Extroversion reflect this pattern. To a lesser extent, the Extroversion global factor correlates positively with Feeling in which judgments tend to be subjective and personal (r = .19), and negatively with Thinking, in which judgments are objective and impersonal (r= -.18).

At the primary level, Liveliness (F), Social Boldness (H), and Self-Reliance (Q2) only correlate with MBTI's Extroversion and Introversion. Warmth (Factor A) correlates negatively with Thinking (r = -.32) and positively with Feeling (r = .24), whereas Privateness (Factor N) shows the opposite pattern, correlating positively with Thinking (r-.27) and negatively with Feeling (r = -.23). Warmth (A) and Privateness (N) are more strongly related to the MBTI Extroversion-Introversion scales, however.

The Anxiety global factor correlates negatively with Extroversion (r = -.38) and positively with Introversion (r = .23), possibly reflecting aspects of social desirability common to low

anxiety and high Extroversion. At the primary level, only Emotional Stability (C +) and Apprehension (0 +) correlate significantly with any of the MBTI types. Emotional Stability correlates positively with MBTI Extroversion (r = .36) and negatively with MBTI Introversion (r = -.23). Apprehension (0 +) correlates negatively with MBTI Extroversion (r = -.32), but is not significantly related to MBTI Introversion. Anxiety does not correlate with any other MBTI scales.

The above information is an example of how the 16PF Fifth Edition has worked hand-in-hand with other tests to show its criterion validity value. As a test of normal personality, however, the 16PF Fifth Edition has a limited range of prediction value. That is, although personality is an important determinant of some behaviors, other aspects of a person (e.g., motivation, interests, ability) also are important in the prediction of future behavior. In a related vein, the 16PF Fifth Edition should never be the sole basis for decision making or selection, although it can be useful as a component of a selection battery.

Fairness of Test For Use With Various Populations

The item content has been revised to reflect modern language usage and to remove ambiguity, and it has been reviewed for gender, race, and cultural bias. It had a .51 with the Culture Fair Intelligence Test (Rieke and Conn, in press f). In general, items do not show bias for gender or race, but level of education does seem to affect scale scores.

Literature Review

There were no current literature reviews for the new 16PF Fifth Edition. There was, however, information found on the 1987 version. This version addressed the below average language skills and cultural disadvantages that may still limit the use of the newer 16PF Fifth

Edition. The previous edition also refers to the global factors as "second-order personality scales"; giving the global factors a perceived sub-servient role. The global factors have also changed from the previous Extroversion, Adjustment, Tough-Mindedness, Independence, and Discipline to Extroversion, Anxiety, Tough-Mindedness, Independence, and Self-Control.

Summary Evaluations

Examining behavioral traits, characteristics, or constructs is not an easy task. The 16PF Fifth Edition is useful in a variety of settings and has proven its worth when compared with other tests measuring similar constructs. There are two shortcomings to the 16PF Fifth Edition, however. One was already mentioned earlier about cultural differences. Different world views may react differently to the different bipolar choices made. Hopefully, counselors, therapists and reviewers of the examination and its results will share a similar world view with the test taker. Another weakness in the test was the previous labeling of secondary factors to what is now known as global factors. Second order factor levels may seem to many to be less important than primary factors when in fact, they interrelate. According to Boyle, "Focusing on the second-order factor level could eliminate problems with the instruments' reliability."

Hopefully, the relabeling of second order factors to Global Factors will also mean treating all the factors as equally important. Overall, the new 16PF Fifth Edition is a superb measurement tool that will increase the chance that personality differences or characteristics can be found to differentiate commissioned officers from noncommissioned ones. It's use as a screening device in schools and in vocational settings is imperative, especially when coupled with other forms of measurement. Further research will increase the data regarding its predictability.

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